

MODULE HANDBOOK

AI Project Manager (IU)

Online Certificate AI Project Manager (UPS-MDPAIPM)

n/a ECTS

Distance Learning

Classification: Diploma

Contents

1. Semester

Module DLMAIAI: Artificial Intelligence

Module Description 7

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Module Description 19

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Module Description 23

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1. Semester

Artificial Intelligence

Module Code: DLMAIAI

Module Type see curriculum	Admission Requirements None	Study Level MA	CP n/a	Student Workload 150 h
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Semester / Term see curriculum	Duration Minimum 1 semester	Regularly offered in WiSe/SoSe	Language of Instruction and Examination English
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Module Coordinator

Prof. Dr. Claudia Heß (Artificial Intelligence)

Contributing Courses to Module

- Artificial Intelligence (DLMAIAI01)

Module Exam Type

Module Exam

Study Format: Distance Learning
Exam, 90 Minutes

Study Format: myStudies
Exam, 90 Minutes

Split Exam

Weight of Module

see curriculum

Module Contents

- History of AI
- AI application areas
- Expert systems
- Neuroscience
- Modern AI systems

Learning Outcomes**Artificial Intelligence**

On successful completion, students will be able to

- remember the historical developments in the field of artificial intelligence.
- analyze the different application areas of artificial intelligence.
- comprehend expert systems.
- apply Prolog to simple expert systems.
- comprehend the brain and cognitive processes from a neuro-scientific point of view.
- understand modern developments in artificial intelligence.

Links to other Modules within the Study Program

This module is similar to other modules in the field of Data Science & Artificial Intelligence.

Links to other Study Programs of the University

All Bachelor Programmes in the IT & Technology field.

Artificial Intelligence

Course Code: DLMAIAI01

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
MA	English		n/a	none

Course Description

The quest for artificial intelligence has captured humanity's interest for many decades and has been an active research area since the 1960s. This course will give a detailed overview of the historical developments, successes, and set-backs in AI, as well as the development and use of expert systems in early AI systems. In order to understand cognitive processes, the course will give a brief overview of the biological brain and (human) cognitive processes and then focus on the development of modern AI systems fueled by recent developments in hard- and software. Particular focus will be given to discussion of the development of "narrow AI" systems for specific use cases vs. the creation of general artificial intelligence. The course will give an overview of a wide range of potential application areas in artificial intelligence, including industry sectors such as autonomous driving and mobility, medicine, finance, retail, and manufacturing.

Course Outcomes

On successful completion, students will be able to

- remember the historical developments in the field of artificial intelligence.
- analyze the different application areas of artificial intelligence.
- comprehend expert systems.
- apply Prolog to simple expert systems.
- comprehend the brain and cognitive processes from a neuro-scientific point of view.
- understand modern developments in artificial intelligence.

Contents

1. History of AI
 - 1.1 Historical Developments
 - 1.2 AI Winter
 - 1.3 Notable Advances in AI
2. Expert Systems
 - 2.1 Overview Over Expert Systems
 - 2.2 Introduction to Prolog

3. Neuroscience
 - 3.1 The (Human) Brain
 - 3.2 Cognitive Processes
4. Modern AI Systems
 - 4.1 Recent Developments in Hard- and Software
 - 4.2 Narrow vs General AI
 - 4.3 NLP and Computer Vision
5. AI Application Areas
 - 5.1 Autonomous Vehicles & Mobility
 - 5.2 Personalized Medicine
 - 5.3 FinTech
 - 5.4 Retail & Industry

Literature**Compulsory Reading****Further Reading**

- Chowdhary, K. R. (2020). Fundamentals of Artificial Intelligence. Springer India.
- Russell, S. & Norvig, P. (2022). Artificial intelligence. A modern approach (4th ed.). Pearson Education.
- Ward, J. (2020). The student's guide to cognitive neuroscience. (4th ed.). Taylor & Francis Group.

Study Format Distance Learning

Study Format Distance Learning	Course Type Online Lecture
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Information about the examination	
Examination Admission Requirements	BOLK: yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	Contact Hours	Tutorial	Self Test	Independent Study	Hours Total
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods	
<input type="checkbox"/> Learning Sprints®	<input type="checkbox"/> Review Book
<input checked="" type="checkbox"/> Course Book	<input type="checkbox"/> Creative Lab
<input type="checkbox"/> Vodcast	<input type="checkbox"/> Guideline
<input checked="" type="checkbox"/> Shortcast	<input checked="" type="checkbox"/> Live Tutorium/Course Feed
<input checked="" type="checkbox"/> Audio	<input type="checkbox"/> Reader
<input checked="" type="checkbox"/> Exam Template	<input checked="" type="checkbox"/> Slides

Study Format myStudies

Study Format myStudies	Course Type Lecture
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Information about the examination	
Examination Admission Requirements	BOLK: yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	Contact Hours	Tutorial	Self Test	Independent Study	Hours Total
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods	
<input type="checkbox"/> Learning Sprints®	<input type="checkbox"/> Review Book
<input checked="" type="checkbox"/> Course Book	<input type="checkbox"/> Creative Lab
<input type="checkbox"/> Vodcast	<input type="checkbox"/> Guideline
<input checked="" type="checkbox"/> Shortcast	<input checked="" type="checkbox"/> Live Tutorium/Course Feed
<input checked="" type="checkbox"/> Audio	<input type="checkbox"/> Reader
<input checked="" type="checkbox"/> Exam Template	<input checked="" type="checkbox"/> Slides

IT Project Management

Module Code: DLMCSITPM

Module Type see curriculum	Admission Requirements None	Study Level MA	CP n/a	Student Workload 150 h
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Semester / Term see curriculum	Duration Minimum 1 semester	Regularly offered in WiSe/SoSe	Language of Instruction and Examination English
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Module Coordinator

Prof. Dr. Carsten Skerra (IT Project Management)

Contributing Courses to Module

- IT Project Management (DLMBITPAM01)

Module Exam Type

Module Exam

Study Format: Distance Learning
Exam, 90 Minutes

Split Exam

Weight of Module

see curriculum

Module Contents

- Organizing the work
- Cost estimation and controlling
- The human factor
- Organizing small and medium projects
- Organizing large projects

Learning Outcomes**IT Project Management**

On successful completion, students will be able to

- critically reflect the status of knowledge on IT project management.
- set up different IT project management formats (small, medium and large projects) and know the methods for managing these different IT projects professionally.
- develop an IT management proposal as the fundament of a professional IT project management concept.
- understand and integrate different IT management project plans (e.g., time plan, cost plan, resources plan, risk plan) and use those plans in an integrative IT project planning and controlling scheme.
- organize and to lead an IT project team and its core and/or extended team members.

Links to other Modules within the Study Program

This module is similar to other modules in the field of Computer Science & Software Development.

Links to other Study Programs of the University

All Master Programmes in the IT & Technology field.

IT Project Management

Course Code: DLMBITPAM01

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
MA	English		n/a	none

Course Description

The purpose of this course is to introduce students to the concepts involved in IT project management. This is achieved through the development of an understanding of the fundamental tenets of project management enhancing the students' ability to apply their knowledge, skills and competencies in analyzing and solving IT project management problems. A special focus is put on the specifics of IT project organization, cost management and the human factor within IT projects.

Course Outcomes

On successful completion, students will be able to

- critically reflect the status of knowledge on IT project management.
- set up different IT project management formats (small, medium and large projects) and know the methods for managing these different IT projects professionally.
- develop an IT management proposal as the fundament of a professional IT project management concept.
- understand and integrate different IT management project plans (e.g., time plan, cost plan, resources plan, risk plan) and use those plans in an integrative IT project planning and controlling scheme.
- organize and to lead an IT project team and its core and/or extended team members.

Contents

1. Introduction: Characteristics of IT Projects
 - 1.1 Defining IT Projects
 - 1.2 Overview on Typical Roles and Phases of IT Projects
 - 1.3 Risks and Challenges of IT Projects
 - 1.4 Role of an IT Project Manager
2. Organizing the Work
 - 2.1 Project Breakdown Structure, Work Packages
 - 2.2 Prioritization
 - 2.3 Time Planning, Milestones, Gantt-Diagram
 - 2.4 Definition of Done

3. Cost Estimation and Controlling
 - 3.1 Challenges of Cost Estimation in IT Projects
 - 3.2 Estimation Techniques: 3-Point Estimation, Double Blind Expert Estimation, Function Points
 - 3.3 Cost Controlling Using Earned Value Analysis
 - 3.4 Risk Management
4. The Human Factor
 - 4.1 Vision Keeping
 - 4.2 Stakeholder Management
 - 4.3 Conflict Management
5. Organizing Small and Medium Projects
 - 5.1 Rational Unified Process (RUP)
 - 5.2 Agile Software Processes
 - 5.3 Scrum
 - 5.4 Plan-driven Project Management in Small Projects
6. Organizing Large Projects
 - 6.1 PMBOK Guide
 - 6.2 Prince2
 - 6.3 Multi Project Management
 - 6.4 Agile Software Processes in Large Projects
 - 6.5 Selection of the Appropriate Project Management Method

Literature**Compulsory Reading****Further Reading**

- Stephens, R. (2015). Beginning software engineering. Chichester: John Wiley & Sons. (Database: ProQuest).
- Hans, R. T. (2013). Work breakdown structure: A tool for software project scope verification. Pretoria: Tshwane University of Technology.

Study Format Distance Learning

Study Format Distance Learning	Course Type Online Lecture
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Information about the examination	
Examination Admission Requirements	BOLK: yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	Contact Hours	Tutorial	Self Test	Independent Study	Hours Total
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods	
<input type="checkbox"/> Learning Sprints® <input checked="" type="checkbox"/> Course Book <input type="checkbox"/> Vodcast <input checked="" type="checkbox"/> Shortcast <input checked="" type="checkbox"/> Audio <input checked="" type="checkbox"/> Exam Template	<input type="checkbox"/> Review Book <input type="checkbox"/> Creative Lab <input type="checkbox"/> Guideline <input type="checkbox"/> Live Tutorium/Course Feed <input type="checkbox"/> Reader <input checked="" type="checkbox"/> Slides

DLMBITPAM01

Project: Technical Project Planning

Module Code: DLMDSETPL1

Module Type see curriculum	Admission Requirements DLMBITPAM01	Study Level MA	CP n/a	Student Workload 150 h
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Semester / Term see curriculum	Duration Minimum 1 semester	Regularly offered in WiSe/SoSe	Language of Instruction and Examination English
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Module Coordinator

Prof. Dr. Dorian Mora (Project: Technical Project Planning)

Contributing Courses to Module

- Project: Technical Project Planning (DLMDSETPL01)

Module Exam Type

Module Exam

Study Format: Distance Learning
Portfolio

Split Exam

Weight of Module

see curriculum

Module Contents

In this course, students learn to apply the project management concepts they learned in previous modules in a real-world project.

Learning Outcomes**Project: Technical Project Planning**

On successful completion, students will be able to

- apply the concepts of project management to real-world tasks and problems.
- translate the learned theories into the practice of project management.
- analyze a real-world problem and define and implement a project to resolve it.
- appraise the results of a project performed and identify what worked well and what did not.
- explain the work they perform, give its scientific background, and produce adequate documentation.

Links to other Modules within the Study Program

This module is similar to other modules in the field of Data Science & Artificial Intelligence

Links to other Study Programs of the University

All Master Programs in the IT & Technology field

Project: Technical Project Planning

Course Code: DLMDSETPL01

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
MA	English		n/a	DLMBITPAM01

Course Description

The focus of this course is to apply the project management knowledge gained previously in a practical portfolio project and reflect on the results. Students engage in this portfolio project and document the results, reflecting on the project management concepts they apply and the influence of these concepts on the success of the project.

Course Outcomes

On successful completion, students will be able to

- apply the concepts of project management to real-world tasks and problems.
- translate the learned theories into the practice of project management.
- analyze a real-world problem and define and implement a project to resolve it.
- appraise the results of a project performed and identify what worked well and what did not.
- explain the work they perform, give its scientific background, and produce adequate documentation.

Contents

- In this course, students perform and document a portfolio project in which they apply the project management topics covered in previous modules.

Literature

Compulsory Reading

Further Reading

- Hinde, D. (2012). PRINCE2 Study Guide. West Sussex: John Wiley & Sons.
- Kneuper, R. (2018). Software processes and lifecycle models. Cham: Springer Nature Switzerland.
- Phillips, J. (2010). IT project management: On track from start to finish (3rd ed.). New York, NY: McGraw-Hill.
- Project Management Institute. (2013). A guide to the project management body of knowledge: PMBOK guide.
- Schwaber, K. (2004). Agile project management with Scrum. Redmond, WA: Microsoft Press.

Study Format Distance Learning

Study Format Distance Learning	Course Type Project
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Information about the examination	
Examination Admission Requirements	BOLK: no
Type of Exam	Portfolio

Student Workload					
Self Study 120 h	Contact Hours 0 h	Tutorial 30 h	Self Test 0 h	Independent Study 0 h	Hours Total 150 h

Instructional Methods	
<input type="checkbox"/> Learning Sprints® <input type="checkbox"/> Course Book <input type="checkbox"/> Vodcast <input type="checkbox"/> Shortcast <input type="checkbox"/> Audio <input type="checkbox"/> Exam Template	<input type="checkbox"/> Review Book <input type="checkbox"/> Creative Lab <input checked="" type="checkbox"/> Guideline <input checked="" type="checkbox"/> Live Tutorium/Course Feed <input checked="" type="checkbox"/> Slides

Seminar: AI and Society

Module Code: DLMAIS AIS

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	MA	n/a	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Prof. Dr. Tim Schlippe (Seminar: AI and Society)

Contributing Courses to Module

- Seminar: AI and Society (DLMAIS AIS01)

Module Exam Type

Module Exam

Study Format: myStudies
Written Assessment: Research Essay
Study Format: Distance Learning
Written Assessment: Research Essay

Split Exam

Weight of Module

see curriculum

Module Contents

In this module, students will reflect on current societal and political implications of artificial intelligence. To this end, pertinent topics will be introduced via articles that are then critically evaluated by the students in the form of a written essay.

Learning Outcomes**Seminar: AI and Society**

On successful completion, students will be able to

- name selected current societal topics and issues in artificial intelligence.
- explain the influence and impact of artificial intelligence on societal, economic, and political topics.
- transfer theoretically-acquired knowledge to real-world cases.
- treat in a scientific manner a select topic in the form of a written essay.
- critically question and discuss current societal and political issues arising from the recent advances in artificial intelligence methodology.
- develop own problem-solving skills and processes through reflection on the possible impact of their future occupation in the sector of artificial intelligence.

Links to other Modules within the Study Program

This module is similar to other modules in the fields of Data Science & Artificial Intelligence

Links to other Study Programs of the University

All Master Programmes in the IT & Technology fields

Seminar: AI and Society

Course Code: DLMAISAI01

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
MA	English		n/a	none

Course Description

In the current decade, impressive advances have been achieved in the field of artificial intelligence. Several cognitive tasks like object recognition in images and video, natural language processing, game strategy, and autonomous driving and robotics are now being performed by machines at unprecedented levels of ability. This course will examine some of societal, economic, and political implications of these developments.

Course Outcomes

On successful completion, students will be able to

- name selected current societal topics and issues in artificial intelligence.
- explain the influence and impact of artificial intelligence on societal, economic, and political topics.
- transfer theoretically-acquired knowledge to real-world cases.
- treat in a scientific manner a select topic in the form of a written essay.
- critically question and discuss current societal and political issues arising from the recent advances in artificial intelligence methodology.
- develop own problem-solving skills and processes through reflection on the possible impact of their future occupation in the sector of artificial intelligence.

Contents

- The seminar covers current topics concerning the societal impact of artificial intelligence. Each participant must create a seminar paper on a topic assigned to him/her. A current list of topics is given in the Learning Management System.

Literature**Compulsory Reading****Further Reading**

- Turabian, K. L. (2013). A manual for writers of research papers, theses, and dissertations. Chicago: University of Chicago Press.
- Swales, J. M., & Feak, C. R. (2012). Academic writing for graduate students, essential tasks and skills. Michigan: University of Michigan Press.
- Bailey, S. (2011). Academic writing for international students of business. New York, NY: Routledge

Study Format myStudies

Study Format myStudies	Course Type Seminar
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Information about the examination	
Examination Admission Requirements	BOLK: no
Type of Exam	Written Assessment: Research Essay

Student Workload					
Self Study	Contact Hours	Tutorial	Self Test	Independent Study	Hours Total
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods	
<input type="checkbox"/> Learning Sprints®	<input type="checkbox"/> Review Book
<input type="checkbox"/> Course Book	<input type="checkbox"/> Creative Lab
<input type="checkbox"/> Vodcast	<input checked="" type="checkbox"/> Guideline
<input type="checkbox"/> Shortcast	<input type="checkbox"/> Live Tutorium/Course Feed
<input type="checkbox"/> Audio	<input type="checkbox"/> Reader
<input type="checkbox"/> Exam Template	<input checked="" type="checkbox"/> Slides

Study Format Distance Learning

Study Format Distance Learning	Course Type Seminar
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Information about the examination	
Examination Admission Requirements	BOLK: no
Type of Exam	Written Assessment: Research Essay

Student Workload					
Self Study 120 h	Contact Hours 0 h	Tutorial 30 h	Self Test 0 h	Independent Study 0 h	Hours Total 150 h

Instructional Methods	
<input type="checkbox"/> Learning Sprints® <input type="checkbox"/> Course Book <input type="checkbox"/> Vodcast <input type="checkbox"/> Shortcast <input type="checkbox"/> Audio <input type="checkbox"/> Exam Template	<input type="checkbox"/> Review Book <input type="checkbox"/> Creative Lab <input checked="" type="checkbox"/> Guideline <input type="checkbox"/> Live Tutorium/Course Feed <input checked="" type="checkbox"/> Slides